

Checklist	Remarks	Action (X)
<p style="text-align: center;">Project System Audit Civil Group</p> <p>Note: Not all items of the checklist shall be checked. It depends on the status of the work and whether it is the first, second or third audit. ⊗ = EH&S related question</p> <p>1. Project Definition</p> <p>1.1 Is the Project Procedure and Execution Manual (PPEM) available? What is the status, issue and date?</p> <p>1.2 Does the PPEM properly describe the scope of work and services expected from your discipline to execute the work?</p> <p>1.3 Are the applicable governmental, local authorities design codes/norms/rules/standards design guides, listed in the PPEM? Are they available in the discipline group?</p> <p>1.4 Are Company/client, standards/norms/guides/practices/procedures/forms and specifications, applicable and to be used by your discipline being listed in the PPEM? Are they available in your group?</p> <p>1.5 Are specific project (account) code specifications applicable and to be used? Are these certified, including client's comments incorporated? i.e.</p> <ul style="list-style-type: none"> • civil design spec. J-1 • piling spec JL- • site preparation S-1 • fencing SF-1 • roads SP-1 • tank settlements ST <p>1.6 Does the PPEM contain an instruction on how to handle project variations of the original work scope regarding administration, approvals and distribution prior to be implemented?</p>		
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<p>1.7 Is the spare part philosophy being spelled-out in the PPEM for the various account codes and components regarding your discipline items to be purchased i.e.: templates, anchor bolts etc.?</p>		
<p>2. Engineering Technical</p>		
<p>2.1 How is it ensured that specifications and calculations are:</p> <ul style="list-style-type: none"> • performed in sequence of criticality? What sets this criticality? • coordinated with other disciplines concerned, where required? • supported by (preliminary) calculation results to prove the quality in accordance with the applicable design codes and governmental and/or local statutory requirements? 		
<p>2.2 How is it ensured that:</p> <ul style="list-style-type: none"> • basic equipment loading tables used by your discipline, are provided by the appropriate discipline and incorporated in the overall foundation location plan? State issue date and status. • supplier supplied equipment loading tables, (i.e. for anchor bolts) are checked and incorporated in the overall foundation location plan? • supplier documents are approved by the discipline engineer assigned on the project. • final calculation documents, prepared by the selected suppliers are provided for comments and/or approval. 		
<p>2.3 Based on which issue of the plot plan(s) are the overall foundation location plan(s) prepared? State issue no., date and status.</p>		
<p>2.4 Computer calculations:</p> <ul style="list-style-type: none"> • are client's software programs to be used? • if so, are they listed in the PPEM with issue number, date and status? 		

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<ul style="list-style-type: none"> • If not, have our programs been certified by the discipline manager? • have they been approved by the client? • if a design code is involved how is it verified, that the latest design code issue has been implemented in the program? 		
<p>2.5 Has the lead discipline engineer approved the materials specified, such as for type of cement, gravel, reinforcing and anchor bolt steel quality, to be used on the project?</p> <p>Has concurrence been obtained from the client?</p> <p>Are materials in compliance with the applicable civil codes?</p>		
<p>2.6 Is a soil report available containing all data required for detail design of the civil works?</p> <ul style="list-style-type: none"> • state issue, date and status. 		
<p>2.7 What decision has been made on steel versus (prefab) concrete for equipment structures and pipe racks?</p>		
<p>2.8 What typical top of foundation elevation has been established in view of underground facilities?</p>		
<p>2.9 Is it expected that we need the services of consultants for special items, i.e. compressor foundations?</p>		
<p>2.10 Is the subcontract plan issued, indicating type and scope of the various civil subcontracts and key dates?</p>		
<p>2.11 Relative to Civil Design and Engineering, do particular risks exist which could ultimately make Company liable and add costs (Dfl.) to the project.</p>		
<p>2.12 ☒ Are basic/preliminary sewer system calculations ready?</p>		
<p>2.13 Have building permits/approvals been obtained?</p>		
<p>2.14 Have all instruction drawings for buildings been certified?</p>		

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<p>2.15 <input checked="" type="checkbox"/> Have fire-proofing requirements been defined?</p>		
<p>2.16 <input checked="" type="checkbox"/> Is soil drainage defined? i.e.:</p> <ul style="list-style-type: none"> • surface drainage • process/chemical sewer(s) etc. 		
<p>2.17 Has a coordination meeting been held with electrical, instr. and UG piping?</p>		
<p>2.18 Has an overall UG plan been made and been agreed upon between disciplines concerned?</p> <ul style="list-style-type: none"> • state issue no., date and status. 		
<p>2.19 <input checked="" type="checkbox"/> Have type(s) of tank foundation(s) and wall(s) been defined?</p>		
<p>2.20 Is it anticipated that non-routine calculation methods are to be applied?</p>		
<p>2.21 Does the civil engineer attend pre-award/bid clarification meetings?</p>		
<p>2.22 Has the civil group ensured that an inspection and HO construction representative is present at preaward/bid clarification meetings on civil subcontracts?</p>		
<p>2.23 Have piling requirements been agreed upon between client, architect (if applicable) and local authorities?</p>		
<p>3. Engineering General</p>		
<p>3.1 Are job related internal detailed instructions used to execute the scope of work and services?</p> <p>Have all group members and other possible disciplines been provided with a copy?</p>		
<p>3.2 How has the discipline project file been organized?</p>		
<p>3.3 Are the project master copies of supplier drawings kept up-to-date on a continuous basis or with frequent intervals?</p> <p>How is this achieved?</p>		

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<p>What references are used to check supplier drawings?</p>		
<p>3.4 How is the status of checks of supplier drawings. against Company engineering documents and their (re-issues) documented?</p>		
<p>3.5 To what extent have local subcontractors been approached to tap their local experience?</p>		
<p>3.6 What is the frequency of receipt of new issues of the equipment list?</p> <p>When was the last (re)-issue received?</p> <p>State issue number, date and status.</p>		
<p>3.7 Are package units properly identified with cross reference, i.e., does the package unit entry contain a listing of the (numbered) components, and does each component refer to the package unit number, including civil group items and/or components?</p>		
<p>4. Job Control</p>		
<p>4.1 Where has the budget for the civil group been defined?</p>		
<p>4.2 Was the civil group involved in preparing the estimate, planning and manpower curve in executing the scope of work and services required for the project?</p>		
<p>4.3 Has the Project Execution Control System (PEC) been prepared for the scope of work and services required and is it used for progress measurement?</p>		
<p>4.4 How much is the progress measured against the PEC summary for the civil group?</p> <p>State date.</p>		
<p>4.5 What efficiency is being reported?</p>		
<p>4.6 How does the final expected manhour requirement relate to the assigned manhour budget?</p>		
<p>4.7 Are changes in the scope of work being processed in time?</p>		
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<p>4.8 Are the PEC and scheduled manhours being adjusted based on the approved project variations?</p>		
<p>4.9 Does the lead civil engineer receive a copy of the weekly LDS print-out?</p>		
<p>4.10 Is there a regular coordination meeting with the project/engineering management and other lead engineers, including planning and cost control?</p>		
<p>4.11 To what extent and by whom, are the planning, cost and engineering managers informed, when changes and/or slippages are encountered?</p>		
<p>4.12 Is the specification/requisition tracking report regularly updated?</p>		
<p>4.13 Are planned milestones met in time?</p>		
<p>4.14 On the planning list, how do the actual dates "for bids" and "for purchase" relate to the original schedule date?</p>		
<p>4.15 Is the lead engineer involved in capital expenditures review?</p>		
<p>4.16 What is currently the percentage of agency personnel on the job within the civil group?</p>		
<p>4.17 Have the authority requirements been established?</p> <p>which authorities are involved?</p> <p>which civil documents have to be submitted for approval and by whom?</p> <p>is sufficient time allowed for presentation and approval time?</p>		
<p>4.18 Are material quantities periodically checked against our estimates?</p> <p>How often are quantity trends checked and do we make periodical forecasts?</p> <p>Is tracking and trending a project requirement?</p>		

Checklist

Remarks

Action
(X)

5. Additional Questions

Product Audit Checklist

Note:

Any major deviation from requirements shall be tagged in the 'No' column and be elaborated on in the main report under Product Audit Findings.

Documents reviewed:

Questions	YES	NO	NA
1. Are input data available?			
2. Have they been formally issued?			
3. Have the data been qualified? (what is/is not included)			
4. Have they been screened for completeness?			
5. Have calculations been performed?			
6. Have these calculations been checked?			
7. Has the product been formally checked?			
8. Is checking evidence available?			
9. Do the issued documents contain sufficient information?			
10. Have multi-discipline input/comments been obtained?			
11. Are the issued documents checked for compliance with client, licensor and authority specifications?			
12. Have all deviations from client, licensor and authority specifications been discussed and formally agreed upon with the relevant party?			
13. Are supplier data included in the document?			
14. Have supplier data been qualified?			
15. Have all requirements of the document been covered?			
16. Have the document requirements been discussed with the internal client?			
17. Have the document requirements been discussed with the external client?			
18. Have any comments been received on earlier issues of the document?			
19. Have all comments been incorporated in later issues?			
20. If not, has agreement been reached about the implementation of comments?			
21. Have changes been clearly indicated?			
22. Has the PM or EM been involved in this discussion in case of comments from the client?			
23. Has the document been reviewed by the discipline manager or his delegate, if required?			
24. Has the document been formally approved at the proper authorization level?			